

CLAIMS

What is claimed is:

- 1 1. A computer system, comprising:
2 a notebook computer having an expansion bus;
3 a docking station having an expansion bus; and
4 a communication pathway coupling the notebook computer and the docking station;
5 wherein each of the notebook computer and docking station communicate across the
6 communication pathway to determine whether the notebook computer and docking station are
7 compatible devices prior to coupling the expansion bus of the notebook computer to the expansion
8 bus of the docking station.
- 2 2. The computer system as defined in claim 1 wherein said communication pathway further
3 comprises a serial communication pathway.
- 4 3. The computer system as defined in claim 2 wherein the serial communication pathway
5 further comprises an Inter-Integrated Circuit (I²C) bus.
- 1 4. The computer system as described in claim 1 wherein the notebook computer further
2 comprises:
3 a microprocessor;
4 a system main memory;
5 a first bridge logic device coupling said microprocessor and system main memory;

6 a second bridge logic device coupled to the first bridge logic device by way of a primary
7 expansion bus;

8 a notebook docking connector coupled to the bus bridge by way of the expansion bus of the
9 notebook computer, the expansion bus being a secondary expansion bus;

10 an input/output device coupled to the second bridge logic device by way of a secondary
11 expansion bus, and wherein said input/output device is configured to communicate across the
12 communication pathway to determine whether the docking station is compatible with the notebook
13 computer; and

14 wherein said communication pathway is a notebook computer serial bus coupled between
15 the docking connector and the input/output device.

1 5. The computer system as defined in claim 4 wherein the notebook computer serial bus
2 further comprises an Inter-Integrated Circuit (I²C) bus.

3 6. The computer system as defined in claim 4 wherein said docking station further comprises:
4 a docking station docking connector;

5 a bus bridge coupled to the docking station docking connector, wherein said bus bridge
6 bridges the secondary expansion bus of the notebook computer to an expansion bus of the docking
7 station;

8 a docking station serial bus coupled to the docking station docking connector;

9 a microcontroller coupled to the docking station serial bus, and wherein said
microcontroller is configured to communicate across the communication pathway to determine
whether the notebook computer is compatible with the docking station;

1 7. The computer system as defined in claim 6 wherein the serial communication pathway
2 further comprises an Inter-Integrated Circuit (I²C) bus.

1 8. The computer system as defined in claim 6 further comprising:
2 a read only memory device (ROM) coupled so the second bridge logic device of said
3 notebook computer;
4 a serial electrically programmable read only memory device (EPROM) coupled to the
5 docking station serial bus;

6 wherein the input/output device of said notebook computer is further adapted to read
7 information from the serial EPROM across the docking station serial bus as part of determining
8 whether the docking station is compatible with the notebook computer; and

9 wherein the microcontroller of the docking station is further adapted to read information
10 from said notebook computer ROM across the notebook computer serial bus as part of determining
11 whether the notebook computer is compatible with the docking station.

1 9. The computer system as defined in claim 4 wherein the notebook computer further
2 comprises:

3 said notebook computer serial bus having a plurality of conductors;

4 said secondary expansion bus having a plurality of conductors;

5 a plurality of electrically controlled switches coupled one each between the docking
6 connector and each of the plurality of conductors of the serial bus and the secondary expansion
7 bus; and

8 said input/output device having a plurality of digital output signals coupled to the plurality
9 of electrically controlled switches, said output signals configured to selectively activate the
10 plurality of electrically controlled switches.

1 10. The computer system as defined in claim 9 wherein the input/output device is configured to
2 activate the digital output signals coupled to the electrically controlled switches of the serial bus to
3 allow the notebook computer and the docking station to communicate when determining whether
4 the notebook computer and the docking station are compatible.

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11. The computer system as defined in claim 9 wherein the input/output device is configured to
12 activate the digital output signals coupled to the electrically controlled switches of the secondary
13 expansion bus after a determination that the notebook computer and docking station are
14 compatible.

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1 13. The method as defined in claim 12 wherein transferring information between the notebook
2 computer and the docking station further comprises:

3 establishing a serial communication pathway between the notebook computer and the
4 docking station;

5 transferring information about the docking station across the serial communication pathway
6 to the notebook computer; and

7 transferring information about the notebook computer across the serial communication
8 pathway to the docking station.

14. The as defined in claim 13 wherein establishing the serial communication pathway further
comprises closing a plurality of electrically controlled switches coupling the serial communication
pathway between the notebook computer and the docking station.

15. The method as defined in claim 13 wherein transferring information across the serial
communication pathway further comprises transferring information across an Inter-Integrated
Circuit (I²C) bus.

16. The method as defined in claim 12 wherein determining whether the notebook computer
and the docking station are compatible further comprises:

executing a program in the notebook computer which program determines whether the
docking station is compatible with the notebook computer;

executing a program in the docking station which determines whether the notebook
computer is compatible; and

7 communicating a message by said docking station to said notebook computer, the message
8 being one of approval and disapproval of electrically coupling the secondary expansion bus of the
9 notebook computer to the bus bridge in the docking station.

1 17. The method as defined in claim 16 wherein executing the program in the notebook
2 computer further comprises comparing information transferred about the docking station to a table
3 containing information about a plurality of docking stations.

1 18. The method as defined in claim 16 wherein executing the program in the docking station
2 further comprises comparing information transferred about the notebook computer to a table
3 containing information about a plurality of notebook computers.

1 19. The method as defined in claim 12, wherein the determining step further comprises:
2 determining whether software in said docking station enables maximum functionality with
3 the notebook computer; and if not,
4 notifying a computer system user of a need to upgrade the docking station software.

1 20. The method as defined in claim 12, wherein the determining step further comprises:
2 determining whether software in the notebook computer enables maximum functionality
3 with the docking station; and if not,
4 notifying a computer system user of a need to upgrade the notebook computer software.

1 21. The method as defined in claim 20, wherein the determining step further comprises:

2 determining whether software in said docking station enables maximum functionality with
3 the notebook computer; and if not,
4 notifying a computer system user of a need to upgrade the docking station software.

1 22. The method as defined in claim 21, wherein notifying the computer system user further
2 comprises sending a message across a serial communication pathway to notify the computer
3 system user.

1 23. The method as defined in claim 12 wherein electrically coupling the secondary expansion
2 bus of the notebook computer to the bus bridge in the docking station further comprises closing a
3 plurality of electrically controlled switches coupling the secondary expansion bus of the notebook
4 to the bus bridge of the docking station.

1 24. A notebook computer for docking to a docking station, the notebook comprising:
2 a CPU;
3 a first bridge logic device coupled to the CPU;
4 a second bridge logic device coupled to the first bridge logic device by way of a primary
5 expansion bus;
6 a docking connector coupled to second bridge logic device by way of a secondary
7 expansion bus;
8 a Super input/output (Super I/O) device coupled to the docking connector by way of a
9 serial bus; and

10 wherein the Super I/O is configured to determine the compatibility of the docking station
11 by communicating with the docking station over the serial bus prior to coupling the secondary
12 expansion bus to the docking station.

1 25. The notebook computer as described in claim 24, further comprising:
2 the Super I/O device having a set of general purpose output signals;
3 a first plurality of quick switch devices coupled between the docking connector and the
4 secondary expansion bus;
5 a second plurality of quick switch devices coupled between the docking connector and the
6 serial bus;
7 said first and second plurality of quick switch devices selectively couple the secondary
8 expansion bus and the serial bus to the docking connector; and
9 said general purpose output signals coupled to each of the first and second plurality of
10 quick switch devices, and wherein the Super I/O is configured to selectively activate the general
11 purpose output signals associated with the quick switch devices of the secondary expansion bus
12 based on the Super I/O's determination as to the compatibility of the notebook computer and the
13 laptop.

1 26. The notebook computer as defined in claim 24 wherein the serial bus further comprises an
2 Inter-Integrated Circuit (I²C) bus.

1 27. A docking station for docking to a notebook computer, the docking station comprising:
2 a docking station docking connector;

3 a bus bridge coupled to the docking station docking connector, wherein said bus bridge
4 bridges the secondary expansion bus of the notebook computer to an expansion bus of the docking
5 station;

6 a docking station serial bus coupled to the docking station docking connector; and

7 a microcontroller coupled to the docking station serial bus, said microcontroller configured
8 to determine the compatibility of the notebook computer by communicating with the notebook
9 over the docking station serial bus.

1 28. The docking station as defined in claim 27 wherein the serial bus is an Inter-Integrated
2 Circuit (I²C) bus.

3 29. A method of operating a notebook computer being docked to a docking station, the method
4 comprising:

5 coupling a serial bus to the docking station;

6 transferring information about the docking station across the serial bus to the notebook
7 computer;

8 determining the compatibility of the notebook computer based on the transferred
9 information; and if the notebook computer is compatible with the docking station,

coupling a secondary expansion bus of the notebook computer to the docking station.

1 30. The method as defined in claim 29 wherein coupling the serial bus to the docking station
2 further comprises:

3 coupling the serial bus of the notebook computer to a plurality of electrically controlled
4 switches, which switches selectively couple the serial bus of the notebook to a serial bus of the
5 docking station;
6 activating the plurality of electrically controlled switches; by
7 asserting an output signal of a device within the notebook computer.

1 31. The method as defined in claim 30 wherein asserting an output signal of a device within the
2 notebook computer further comprises asserting a general purpose digital output signal of a Super
3 Input/Output controller.

1 32. The method as defined in claim 29 wherein coupling the secondary expansion bus of the
2 notebook computer to the docking station further comprises:

3 coupling bus conductors of the secondary expansion bus to a plurality of electrically
4 controlled switches, which switches selectively couple the secondary expansion bus to the docking
5 station;

6 activating the plurality of electrically controlled switches; by
7 asserting an output signal of a device within the notebook computer.

1 33. The method as defined in claim 32 wherein asserting an output signal of a device within the
2 notebook computer further comprises asserting a general purpose digital output signal of a Super
3 Input/Output controller.

1 34. The method as defined in claim 29 further comprising generating a message for a computer
2 system user if said docking station requires a software update.

1 35. A method of operating a docking station for docking with a notebook computer, the
2 method comprising:

3 transferring information about the notebook computer across a communication pathway;

4 determining the compatibility of the docking station with the notebook computer based on
5 the information; and, based on that determination,

6 sending a message across said communication pathway indicating one of the docking
station's approval or disapproval of further electrically coupling the docking station to the
notebook computer.

7 36. The method as defined in claim 35 further comprising sending a message across the
communication pathway which invokes a message to the notebook computer user indicating the
need to upgrade software of the notebook computer.

1 37. The method as defined in claim 36 wherein sending the message across the communication
2 pathway further comprises sending the message across an Inter-Integrated Circuit (I²C) bus.